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1.0 Purpose and Need

The purpose of the Guidelines is to ensure consistency in designing and constructing public sanitary sewer infrastructure for collection, conveyance, and treatment within the HRSD Service Area.

The Guidelines are based on design practices and standards presently in use throughout the professional engineering community and in communities which provide public sanitary sewer service to their constituents.

Furthermore, the Guidelines are meant to supplement and/or strengthen the existing State of Virginia Sewer Collection and Treatment (SCAT) Regulations. Finally, the Guidelines are subject for review and updates on an annual basis and as needed by HRSD Staff.

2.0 Definitions

Unless otherwise specified, for the purpose of the guidelines herein, the following words and terms shall have the following meanings unless the context clearly indicates otherwise:

Agreement: Public system ownership transfer agreement executed between HRSD and Localities

CCTV: Close Circuit Television

Equivalent Residential Unit (ERU): The volume of wastewater flows estimated or projected to be generated by a typical, single residential dwelling unit connected to the public sewer system

FOG: Fats, oils, and grease program implementation in compliance with HRSD P3 and HRPDC requirements

HRSD Standards: HRSD Standards, which can be found on the HRSD official web site at www.hrsd.com.

MP: The geographical space in the Commonwealth of Virginia defined as the Middle Peninsula with York River to the south and Rappahannock River to the north

P3: HRSD Pretreatment & Pollution Prevention Division under the Water Quality Department

Person: Any individual, firm, partnership, corporation, association, society, institution, group or legal entity.

Public Sewers: All sewers in which all owners of abutting properties have equal rights and which is owned, operated, and maintained by HRSD. Public sewers shall include but not limited to gravity collection mains, vacuum mains, sewer manholes, vacuum pits, sewer clean-outs, sewer laterals, pump stations, and force mains

ROW: Public Right-of-Way owned, operated, and maintained by VDOT

SCAT Regs: State of Virginia Sewer Collection and Treatment Regulations

SCSA: Small Communities Service Area encompassed by the Counties and Towns as defined under Small Communities

SCSG: Small Communities Sewer Guidelines

Sewer clean-out: The infrastructure built with the sewer lateral that provides access to the public lateral line for routine maintenance and inspections

Sewer lateral: The portion of the sewer line which is directly connected to the public gravity main and the sewer clean-out

Sewer service area: An area within a political subdivision boundary where a public sanitary sewer infrastructure is either in place or it is proposed and all its inhabitants have or shall have equal access to such infrastructure

Sewer service line: The portion of the sewer line which is connected to the public sewer clean-out and to the dwelling or buildings located within a particular property

Small Communities (SC): It encompasses the counties of Mathews, King William, King & Queen, Essex, Middlesex, and Surry, and the towns of Urbana, West Point, and Saluda.

SCD: HRSD Small Communities Division

STEP: Septic Tank Effluent Pump discharging into a pressurized sanitary sewer force main

STEG: Septic Tank Effluent Pump discharging into a gravity sewer collection system

Subdivision: Land which is subdivided to multiple parcels as part of a residential, commercial, or industrial development.

SWCB: State Water Control Board

HRSD: Hampton Roads Sanitation District

HRPDC: Hampton Roads Planning District Commission

VDH: Virginia Department of Health

VDOT: Virginia Department of Transportation

VPA: State of Virginia Pollution Abatement Regulations

VPDES Permit: The Virginia Pollution Discharge Elimination System permit issued by the Virginia Water Control Board to the operators of wastewater treatment facilities authorizing the discharge of treated wastewater into the receiving waters of the Commonwealth of Virginia.

VUSBC: Virginia Uniform Statewide Building Code

3.0 General

All provisions included under these Guidelines pertain to all public sewers as defined herein and such sewers are owned, operated and maintained by HRSD.

3.1 Gravity Sewer Availability

Gravity sewer availability will be defined as for any property fronted by public gravity or vacuum sewer system and where a connection can be made from an existing or new public sewer clean-out or vacuum pit to the premise(s) by gravity.

3.2 Public vs. Private Sanitary Sewer Facilities

3.2.1 Public sewers:

These facilities are defined as those which serve more than one property and are located within public ROWs and/or public utility easements. Public sewers may be comprised of gravity mains, service laterals and clean-outs, vacuum mains, vacuum pits, pump stations and force mains. HRSD shall be responsible to operate and maintain public sewer infrastructure upon ownership transfer agreement executed by the Locality and HRSD.

3.2.2 Private sewers:

These facilities are defined as those which serve a single property and are located on private property or within a private

ingress/egress easement or a private ROW for the sole purpose of serving one property. These facilities may be comprised of gravity mains, manholes, pump stations, and force mains. It is the owner's sole responsibility to operate and maintain such facilities in accordance to all applicable laws and ordinances. A single property shall also mean an apartment or condominium complex with multiple units. HRSD shall not be responsible to operate or maintain these sewers.

3.3 Service Connections to Public System

Each residential or commercial unit shall be served by a separate service connection with its own dedicated public clean-out. The following list identifies, but is not limited to, the types of premises that will be served as such:

- a. Single family home;
- b. Townhome;
- c. Carriage home;
- d. Detached condominium;
- e. Parcel containing multiple units that are under single ownership and/or management (Note, if parcel is ever subdivided, each new parcel would require its own separate service connection).

Subsequent subdivision of a parcel shall require a new dedicated lateral and clean-out for each new parcel.

3.4 HRSD Limit of Responsibility/Ownership

HRSD sets the limits of ownership and responsibility as followed:

3.4.1 Gravity sewer connection:

HRSD ownership and responsibility shall be delineated at the public sewer clean-out.

3.4.2 Vacuum sewer connection:

HRSD ownership and responsibility shall be delineated at the vacuum pit.

3.4.3 Pressurized sewer connection:

HRSD ownership and responsibility shall be delineated at the public valve vault.

3.5 Public Utility Easement Requirements

3.5.1 Plat Preparation and Deed of Easements:

All utility easement plats should be prepared in accordance to HRSD Standards. All utility easements dedicated to HRSD shall be reviewed and approved by HRSD. Developer shall be responsible to record all easement plats with Locality and sureties shall not be issued until such proof has been provided to HRSD.

3.5.2 Utility Easement Encroachment:

A property owner or applicant who wishes to encroach into an existing HRSD utility easement must submit site plans to HRSD for review and approval.

3.5.3 Types of Encroachment:

Proposed land uses within an existing utility easement must comply with the terms and conditions set forth in the Deed of Easement. HRSD, at its own discretion, reserves the right to augment, revise, or stipulate new restrictions at the time of such request is made. In general, encroachments within these easements shall be limited to minimum landscape such as flower beds, ornamental trees, and shrubs. Permanent structures shall not be permitted. Structures considered as temporary of nature (no concrete footings) such as parking lots, sheds, ground patios and decks, and drive-ways shall be reviewed by HRSD and approved on a case by case basis.

3.5.4 Easement Requirements for Gravity, Force, and Vacuum Mains:

All gravity, force, and vacuum mains placed outside of the ROW limits shall require a minimum twenty (20) foot easement dedicated to HRSD. Such easement shall be contiguous to the public ROW limit or an existing HRSD permanent utility easement. Easement width requirements shall vary contingent upon the type of infrastructure, pipe diameter, and depth. Furthermore, utility easement limits shall be defined such that the proposed infrastructure is located at the center line of such easements.

3.5.5 Sewer Clean-out and Vacuum Pit Utility Easements:

All public sewer clean-outs and vacuum pits placed outside of the ROW limits shall require a five (5) foot easement dedicated to HRSD. Such easement shall be contiguous to the public ROW limit or an existing HRSD permanent utility easement. Encroachments

within these easements shall be limited to minimum landscape improvements such as flower beds and shrubs. Temporary or permanent structures shall not be allowed within the dedicated easement. The clean-out or vacuum pit casting and appurtenances must remain visible at all times and readily accessible to HRSD crews for routine maintenance.

3.5.6 Access Roads:

Where access roads are needed, they shall be a minimum of 12 feet and shall meet all VDOT standards and specifications. Entry and exit points shall be provided for all access roads. In cases where the entry and exit points are the same, a turnaround must be provided. All access roads and turnarounds shall be located within dedicated HRSD easements and at the center line of such easement.

3.6 Pump Station Property Acquisition

All new public pump station facilities with the intent to transfer ownership to HRSD must be located within a recorded parcel and must be acquired fee simple and be free of any liens or encumbrances against the property during the ownership transfer. Furthermore, the size of the dedicated property shall be contingent upon the actual foot print of the pump station facility required and shall be reviewed and approved by HRSD. The Developer, County or Town officials shall therefore be required to coordinate with HRSD very early in the design phase of the project to define pump station site selection criteria.

4.0 Design Guidelines

4.1 Applicable Regulations:

Unless otherwise stated in this section of the guidelines herein, the most recent publication of the State of Virginia Collection and Treatment Regulations (SCAT Regulations, Chapter 790) shall be applied in the design of all public sewer infrastructure.

4.2 Variance Requests:

Variance requests deviating from the guidelines herein must be submitted in writing to HRSD for review and approval. HRSD reserves the right to approve or deny each variance request on a case by case basis.

4.3 Sewer Flow Calculations:

Estimated sanitary sewer flow generation from new projects shall be calculated per the [HRSD Sanitary Sewer Flow Calculations Worksheet](#). Sound engineering judgement may be used when estimating flows outside these flow parameters.

4.4 Public Sewer Service Laterals and Clean-Outs:

The design and construction material of laterals and clean-outs shall adhere to the HRSD Standards.

All laterals shall be installed at the time the public system is being constructed. The laterals shall be directly connected to the sewer main utilizing a wye connection.

Public sewer clean-outs shall be placed within the public ROW limits adjacent to the property line.

4.5 Gravity Sanitary Sewer Mains

All gravity sanitary sewer mains which shall be part of the public sewer system shall be designed and constructed in accordance to HRSD Standards and the Guidelines herein.

4.5.1 Minimum Cover:

Minimum cover for gravity sewers shall be three (3) feet.

4.5.2 Maximum Cover:

Maximum cover for gravity mains shall not exceed 16 feet. Please refer to pipe materials section below for covers greater than 10 feet.

4.5.3 Placement:

Gravity sanitary sewer mains shall be located in the paved section of public ROWs.

4.5.4 Acceptable Pipe Materials:

Polyvinyl Chloride (PVC) - shall meet requirements of ASTM D 3034 and shall have integral bell, gasket joint pipe with a minimum standard dimension ratio (SDR) of 26 (21 for vacuum sewers) and a minimum stiffness of 46 psi at 5% deflection, contingent upon depth. For deeper installations C-900/C-905 PVC may be required.

4.5.5 Appurtenances:

Fittings and gaskets for sanitary sewer installations shall meet criteria listed in the current VDOT Road and Bridge Specifications, HRPDC specifications, and HRSD Standards.

4.5.6 Sizing:

The minimum pipe diameter allowed for gravity mains is 8-inch. Gravity mains shall be installed based on minimum slopes in conformance to the current edition of the State of Virginia SCAT Regulations.

4.5.7 Slope

For gravity mains with slopes greater than the minimum, special consideration must be given in the design of the receiving manhole bench to ensure flow remains within the channel.

4.5.8 Utility Separation:

Public gravity sewer mains shall be installed such that a minimum of 18" vertical and 10' horizontal clearances from other utilities are provided, pursuant to the provisions outlined in the State of Virginia Code [Section 12VAC5-590-1150](#) requirements.

4.5.9 Buoyancy:

Where high groundwater conditions are anticipated or known to exist, buoyancy of sewers shall be given due consideration and appropriate construction shall be employed to prevent flotation of any gravity sanitary sewer mains. Buoyancy calculations shall be based on sewer pipes that are not conveying any flow.

4.5.10 Trenching, Bedding, and Backfill:

All trenching, bedding, and backfill work must be in compliance with HRSD Standards and with the current edition of VDOT Road and Bridge Specifications.

4.5.11 End-of-line (EOL):

No clean-outs shall be allowed at the end-of-line.

4.6 Manholes:

All manholes which shall be part of the public sewer system shall be designed and constructed in accordance to HRSD Standards and the Guidelines herein.

For any gravity sewer construction and testing specifications, the HRPDC Construction Standards will apply in addition to the requirements stated under this section of the Guidelines.

There shall be 0.1 foot drop between the inlet and outlet inverts.

Bench and flow channel in sewer manholes shall be designed in conformance with HRSD Standards.

4.6.1 Maximum Distance:

Maximum distance between two manholes shall not exceed 400 feet.

4.6.2 Manhole Diameters:

Manhole with less than 12 feet depth shall have a diameter of 4 feet. All others shall be a minimum of 5 feet in diameter for the entire length below the cone.

4.6.3 Stub-outs:

Stub-outs at new manholes planned for future gravity sewer expansion shall not exceed five (5) feet in length. A plug shall be installed at the end of the stub-out.

4.6.4 Maximum Depth:

The maximum depth for collection manholes shall not exceed 16 feet from manhole cover to pipe invert unless it is approved by HRSD.

4.6.5 Placement:

Manholes installed as part of a new public gravity collection sewer system shall be located in the paved section of the ROW and outside the wheel path of traffic lanes.

4.7 Force Mains and Valves:

All public force mains and valves shall be designed, constructed, and tested in accordance to HRSD Standards.

Where a private pump is utilized to serve a property, a public sewer valve vault shall be placed adjacent to the property line within the public ROW limits.

4.8 Vacuum Sewer:

Public sewer vacuum pits shall be placed adjacent to the property line within the public ROW limits.

Where a vacuum pit is to serve two adjacent properties, the pit shall be located against the shared property line to eliminate the need for private utility easements.

4.9 Pump Stations

All pump stations which shall be part of the public sewer system shall be designed and constructed in accordance to HRSD Standards.

5.0 Fats, Oils, & Grease Program (FOG)

Pursuant to the HRSD P3 Industrial Wastewater Discharge Regulations, all requirements and regulations described therein shall be enforceable pursuant to the authority provided under the Enabling Act. The Industrial Wastewater Discharge Regulations and Best Management Practice for Grease Control Devices - Small Communities can be found at <https://www.hrsd.com/industrial-customer>.

For additional information about FOG program and policies please visit the HRPDC official web site at <http://www.hrfog.com> or the HRgreen.org at <http://askhrgreen.org/gtk-gtd/fat-free-drains/>.